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The Polyporaceae of North America — VI. The genus *Polyporus*

WILLIAM ALPHONSO MURRILL

The genus *Polyporus*, as established by Micheli (Nov. Pl. Gen. 129. *pl.* 70–71. 1729), was such a natural division and so clearly distinguished that it remained intact for over a century. Its nomenclatorial type was *P. leptcephalus* (Jacq.) Fr. and associated with this species were some of the most common and well-known members of the family. Unfortunately, however, Linnaeus retained the name *Boletus* for all pore-bearing fungi, and those mycologists who adopted Micheli's genus failed to establish it according to modern ideas. Adanson, for example, only cited Micheli's figures and listed no properly named species; Haller used only polynomials; and Scopoli in his *Introductio* listed no species at all under *Polyporus*. It was thus left to Paulet (*Icon. Champ. pl.* 13. 1793) to securely establish the genus. Paulet's work, written twenty or more years before its publication, contains descriptions and figures of six species of *Polyporus*; *P. Ulmi*, *P. frondosus*, *P. umbilicatus*, *P. carbonarius*, *P. fasciatus* and *P. Tuberaster*, four of which belong to Micheli's genus in the strictest sense. The first species, *P. Ulmi*, is the very common one well known as *P. squamosus* (Huds.) Fr. and must be considered the nomenclatorial type of *Polyporus* according to principles now in vogue. The general use of *Polyporus* instead of *Boletus* is chiefly due to Fries, who, without knowledge of Paulet's work, "restored" the name in 1815 and made it popular in spite of the influence of Linnaeus.

In recent systems of classification the original significance of the term *Polyporus* has been somewhat perverted. Karsten, for example, assigned *Polyporus* to the terrestrial central-stemmed forms and placed the wood-loving species under the new genus *Polyporellus* (Medd. Soc. Faun. et. Fl. Fenn. 5: 37. 1879). Quélet adopted new names for both of these groups, *Caloporus* for the first and *Leucoporus* for the second, and erected the monotypic genus *Cerioporus* on *Polyporus caudicinus* (Enchiridion Fungorum, 164–167. 1886). Patouillard followed Quélet in the main, but

used *Polyporus* in the Karstenian sense instead of *Caloporus* and proposed the new name *Melanopus* for the group to which Karsten had assigned the name *Polyporellus* (Hymenom. Eur. 137. 1887). One finds, therefore, four modern generic names, *Polyporellus*, *Leucoporus*, *Cerioporus* and *Melanopus*, associated either with the type or with a near ally of the type of the genus *Polyporus* and hence synonymous with it.

The species of this genus are in general very similar in appearance and habit, most of them being small dark-colored plants attached to fallen branches and other decaying wood on or near the ground. One species, however, *P. caudicinus*, is very large and does considerable damage to living trees, especially in Europe where it is abundant. The smallest plant of the genus is *P. Acicula*, a tropical form only two millimeters in diameter represented by a single specimen in the Kew herbarium. Many other species of this group are based upon very scanty collections, some well preserved, others now in poor condition, and most of them inadequately described. The task of the monographer is, therefore, in this case unusually difficult and his results more or less unsatisfactory.

Synopsis of the North American species

- | | |
|---|---------------------------|
| 1. Stipe pallid or light brown, centrally attached, not darker than the pileus. | 2. |
| Stipe wholly or partly black or fuliginous, variously attached, usually darker than the pileus. | 17. |
| 2. Margin of pileus not ciliate. | 3. |
| Margin of pileus ornamented with cilia, which often disappear with age. | 12. |
| 3. Pileus beset near the margin with hydroid processes. | 1. <i>P. hydniceps</i> . |
| Pileus plainly villose, tomentose or scabrous, often becoming glabrous with age. | 4. |
| Pileus minutely tomentose or glabrous from the first. | 8. |
| 4. Pileus scabrous, irregular, umbrinous, margin involute; stipe scabrous, tubes small, 4 to a mm., dissepiments dentate. | 2. <i>P. scabriceps</i> . |
| Pileus villose or tomentose. | 5. |
| 5. Pileus becoming virgate from the rupture of the cuticle, tubes 2 to a mm., decurrent, dissepiments dentate. | 3. <i>P. virgatus</i> . |
| Pileus not becoming virgate. | 6. |
| 6. Pileus less than 2 cm. in diameter, ochraceous, tubes 2 to a mm., decurrent to the base of the stipe. | 4. <i>P. delicatus</i> . |
| Pileus more than 2 cm. in diameter. | 7. |

7. Tubes decurrent, very short, entire, pileus dark purple, ornamented here and there with paler radiating lines, surface finely tomentose, becoming glabrous.
5. *P. dibaphus*.
- Tubes not decidedly decurrent, denticulate when mature, pileus yellowish to smoky black, villose, at length glabrous, spores oblong, curved, $6 \times 2 \mu$.
6. *P. Polyporus*.
8. Sporophore goblet-shaped, pileus less than 3 cm. broad, shallowly depressed at the center, stipe long, striate, expanding into the pileus. 7. *P. Tuba*.
Sporophore trumpet-shaped, pileus 5-10 cm. broad, deeply infundibuliform, stipe 3 cm. long, pallid, pulverulent. 8. *P. craterellus*.
Sporophore not as above. 9.
9. Pileus minute, 2 mm. in diameter, umbilicate, margin involute, pores alveolar. 9. *P. Acicula*.
Pileus large, 10 cm. or more in diameter, umbrinous, stipe short, thick, hispid, pores at length sinuous, dissepiments dentate. 10. *P. discoideus*.
Pileus of medium size, 2-5 cm. in diameter. 10.
10. Context whitish or brownish in color, extremely thin. 11.
Context golden-yellow, not extremely thin, tubes remote from the stipe. 11. *P. phaeoxanthus*.
11. Pileus brown, polished, context light brown, tubes decurrent. 12. *P. Columbiensis*.
Pileus white or pallid, more or less translucent, context white, tubes adnate, exceedingly minute, 8 to a mm. 13. *P. obolus*.
12. Tubes alveolar. 13.
Tubes not alveolar. 15.
13. Margin of pileus finely hispid, broadly sterile below, surface ochraceous, radiate-striate, stipe brown, pulverulent. 14. *P. aemulans*.
Margin of pileus strigose, fertile below. 14.
14. Pileus very thin, smooth, pellucid, fragile, stipe thicker below, setulose. 15. *P. arculariellus*.
Pileus not very thin, fuscous-squamulose to glabrous, stipe equal, grooved, squamulose, grayish-fuscous. 16. *P. arcularius*.
15. Tubes fairly regular, stipe slender, not polished, plants rather delicate, cilia variable in form and persistence. 16.
Tubes very irregular, stipe usually thick and polished, pileus tough, umbilicate, yellowish-white with brown marginal band, cilia short, fugacious. 17. *P. variiporus*.
16. Pileus opaque, not translucent, 1-4 cm. in diameter, cilia long, of uncertain duration, plants mostly cespitose. 18. *P. Tricholoma*.
Pileus very thin, more or less translucent, 1-2 cm. in diameter, cilia short, slender fugacious, plants not cespitose. 19. *P. Corvelli*.
17. Pileus squamose, very large, flabelliform, tubes large, alveolar. 20. *P. caudicinus*.
Pileus finely tomentose, drab-colored, with reddish-brown spots, small, circular, tubes rounded, minute. 21. *P. maculosus*.
Pileus glabrous, uniform in color, variable in form, tubes punctiform. 18.

18. Stipe ivory-black below, pileus usually ochraceous, surface scarcely depressed, margin even, not becoming extremely thin. 22. *P. elegans*.
 Stipe smoky-black below, pileus usually chestnut-colored, depressed at the center or behind, margin very thin and irregular. 23. *P. fissus*.

1. POLYPORUS HYDNICEPS B. & C. Jour. Linn. Soc. Bot. 10 :
 305. 1868

This is one of Wright's plants collected in Cuba. Berkeley's description is characteristically brief, but, fortunately, the type still exists in fairly good condition in the Kew herbarium. It is readily distinguished from all other species in the genus by the short cylindrical or subpyramidal hydroid processes which it bears on the surface of the pileus near the margin. In shape it is variable and quite irregular, often breaking into fan-shaped lobes as it develops and folding inward or outward at the margin as circumstances determine. The stipe is short, thick, usually blackish and often reticulate. The fruit bodies occur at times in clusters with their stipes closely united at the base. In general appearance this species resembles *Scutiger griseus* and its near allies, but it seems hardly fleshy enough for that group and is moreover so much like species of *Polyporus* in habit that I have retained it in the latter genus as here restricted.

2. POLYPORUS SCABRICEPS B. & C. Jour. Linn. Soc. Bot. 10 :
 305. 1868

This species is well named. The type at Kew, collected by Wright in Cuba on decaying wood, is well preserved and still shows the characteristic scabrous covering. Other characters are the dark brown surface, involute margin, decurrent, dentate tubes and short brown stipe. Like most of the Cuban species, it is rare and very imperfectly known as regards distribution and variation.

3. POLYPORUS VIRGATUS B. & C. Jour. Linn. Soc. Bot. 10 :
 304. 1868

Six type plants of this species are at Kew, collected in Cuba by Wright. They are of the typical *Polyporus* form and habit with rather delicate, fragile tubes and thin cuticle, which at length ruptures in a way quite characteristic of the species. This plant resembles *P. discoideus*, but is tougher, firmer and somewhat smaller in addition to being virgate.

4. *POLYPORUS DELICATUS* B. & C. Grevillea, **1**: 37. 1872

Only one small plant of this species is to be found in the Kew herbarium. It was collected in Alabama by Peters, growing on decaying wood. It is uniformly ochraceous in color, tomentose, of soft elastic substance, with a thin undulate revolute margin. The tubes are angular, 2 to a mm., decurrent even to the base and quite collapsed when dry. The stipe is central and radicate, and the buried portion is darker in color than the rest. At first sight, the surface suggests *Polyporus fractipes*, the color being very similar in both, but the central stipe, firmer substance and much larger tubes of *P. delicatus* readily distinguish it from that species.

5. *POLYPORUS DIBAPHUS* B. & C. Grevillea, **1**: 36. 1872

This plant resembles *P. Polyporus* in many respects, but its pore structure appears to be different. It was collected by Peters in Alabama on trunks of *Ilex*. The type at Kew is the larger share of a single specimen cut in two. A better developed plant might show closer resemblance to *P. Polyporus*. One can never be entirely free from the suspicion that species resting upon a slight material basis and closely resembling species that are common and variable may possibly be only undeveloped or depauperate or abnormal forms of the more abundant species. It seems best, however, in the present instance to consider *P. dibaphus* as distinct until its relationships are more clearly proved.

6. **Polyporus Polyporus** (Retz)

Boletus Polyporus Retz, Vet. Ac. Handl. 253. 1769.

Boletus brumalis Pers. Neues Mag. Bot. **1**: 107. 1794.
Batsch, Elench. Fung. *pl.* 10, *f.* 42a. 1783.

Boletus fasciculatus Schrad. Spic. 154. 1794.

Polyporus brumalis Fr. Obs. Myc. **2**: 255. 1818.

Polyporus luridus B. & C. Grevillea, **1**: 37. 1872.

Polyporellus brumalis Karst. Medd. Soc. Faun. et. Fl. Fenn. **5**:
37. 1879.

Polyporellus Polyporus Murrill, Jour. Myc. **9**: 93. 1903.

There are two forms of this widely distributed plant, both occurring throughout Europe and North America. It was the yel-

low, or vernal, form which Retz described, while Schrader was dealing with the darker autumnal form of the plant. In his synopsis, Persoon separates the two forms as varieties *vernus* and *fasciculatus*. *P. luridus* of Berkeley and Curtis is to be referred to the latter variety.

This species is found on various kinds of decaying wood in forests and groves, usually upon branches lying on the ground. Its persistence far into the winter in the fresh state led Persoon to give it the name by which it is generally known. Among the specimens examined are the following: Tyrol, *Bresadola*; Berlin, *Sydow*; Finland, *Karsten*; Sweden, *Murrill*; Canada, *Dearness*, *Macoun*; Maine, *Ricker*; New Hampshire, *Miss Minns*; Connecticut, *Wright*; New York, *Shear*, *Underwood*, *Overacker*; Delaware, *Commons*; Ohio, *Morgan*; Wisconsin, *Lapham*, *Seymour*; Iowa, *Holway*; Montana, *Anderson*.

7. POLYPORUS TUBA B. & C. Jour. Linn. Soc. Bot. 10:
305. 1868

This species is founded upon a single collection by Wright in Cuba, the types being at Kew. It is readily recognized by its peculiar goblet-shaped form, resembling a long-stemmed *Peziza* or a young stage of *Cantharellus cibarius*. Its substance is relatively quite thick, the depression at the center being shallow instead of deep as might be expected from its shape. The margin, if not straight, is rolled inward instead of outward, and the stipe is long, slender and undulate.

8. POLYPORUS CRATERELLUS B. & C. Jour. Linn. Soc. Bot.
10: 305. 1868

The type collection of this species was made by Wright in Cuba. The name is well chosen and refers to a character by which the plant is easily distinguished from its near allies. Plants collected in Louisiana by Langlois are even more deeply infundibuliform than the types and are also somewhat larger. The species occurs on decaying wood and appears usually in small clusters.

9. POLYPORUS ACICULA B. & C. Jour. Linn. Soc. Bot. 10:
304. 1868

This minute species is represented by a single specimen, two millimeters in diameter, collected on decayed wood in Cuba.

The stipe is long and slender, centrally attached and somewhat hairy at the base. The pileus is umbilicate with involute margin resembling a minute species of *Omphalia* in shape. In general appearance the plant resembles *P. Tricholoma*, but the margin is without cilia and the pores are alveolar.

10. POLYPORUS DISCOIDEUS B. & C. Jour. Linn. Soc. 10 :
303. 1868

This species was collected by Wright in Cuba. It is rather larger than most of the members of the genus, but resembles them closely in habit and structure. Its nearest ally is perhaps *P. virgatus*. Being large, it is rather fleshy, the context becoming soft, corky and elastic when dry. The tubes are rather large, at length sinuose, and become collapsed on drying, indicating a soft condition when fresh.

11. POLYPORUS PHAEOXANTHUS B. & Mont. Sylloge Crypt.
154. 1856

This rare species was collected at Columbus, Ohio, by Sullivant. It grew on fallen oak wood. The type at Paris is in fragments, but these are well preserved. The character by which the species is at once recognized is the deep yellow color of the context. The pileus is convex, reddish-brown, glabrous, scarcely a millimeter thick and about two centimeters broad; the stipe central and concolorous, the tubes minute and remote from the stipe.

12. POLYPORUS COLUMBIENSIS Berk. Lond. Jour. Bot. 1 :
454. 1842

This is one of the thinnest species of the family, resembling a brown cuticle stripped from some fruit having a smooth, waxy, polished coat. It is orbicular in shape with a dark central stipe and small decurrent tubes. The type was sent to Berkeley from the Columbia River region of South Carolina. There is also in the Berkeley herbarium a specimen from Chicalahi, Mexico, bearing the same name, which may be the same species.

13. POLYPORUS OBOLUS Ell. & Macbr. Bull. Iowa Univ. Lab.
Nat. Hist. 4 : 68. 1896

A small plant with very thin partially translucent pileus, brown central stipe and exceedingly minute pores. Pileus orbicular,

plane, $1.5-2.5 \times 0.03-0.08$ cm.; surface minutely tomentose, radiate-rugose, isabelline, fulvous at the center; margin straight or repand, even, glabrous, entirely devoid of teeth or cilia: context 0.2-0.7 mm. thick, tough, white, translucent, especially near the margin; tubes 0.1 mm. long, 8 to a mm., adnate, white, cylindrical, regular, edges thick, entire; spores ovoid, smooth, hyaline, $3.5-4 \times 4.5-5 \mu$: stipe central, tough, elastic, slender, equal, chestnut-colored, glabrous, smooth, much compressed in drying, 2-4 cm long, 1-2 mm. thick.

The above description of this species is made from dried plants now in the herbarium of the New York Botanical Garden, collected by C. L. Smith in Nicaragua.

Type plants kindly furnished me by Macbride agree in all respects with these, being a part of the same collection. The species is nearly related to *P. Tricholoma*, but the pileus is very thin and translucent, the margin entirely glabrous and the pores scarcely one eighth of a millimeter in diameter.

14. *POLYPORUS AEMULANS* B. & C. Jour. Linn. Soc.
Bot. 10: 304. 1868.

Very little is known of this species beyond the small type collection from Cuba and Berkeley's rather meager description. The types are well preserved, however, and show decided characters. They resemble *P. arcularius* in having alveolar tubes, but these tubes are broad and shallow and disappear near the margin, leaving a sterile marginal band one or two millimeters in diameter. In habit, the species resembles *P. Polyporus*. The whole plant is thin and tough, with brown central stipe.

15. *Polyporus arculariellus* nom. nov.

Favolus Curtisii Berk. Grevillea, 1: 68. 1872.

One specimen only of this plant seems to have been sent to Kew by Curtis from his North Carolina collections. This is well preserved, however, and shows the very thin pellucid pileus ornamented around the margin with long cilia, the oblong favoloid tubes and the centrally attached tapering stipe that characterize the species. It is a near ally of *Polyporus arcularius*, though smaller and much more delicate, and also closely resembles such ciliated forms as *P. Tricholoma* and its near allies; so that its natural affinities appear to be with *Polyporus* rather than with *Favo-*

lus. It is unfortunate that the existence of a *Polyporus Curtisii* renders it necessary to change the species name in the transfer from one genus to the other.

16. *POLYPORUS ARCULARIUS* (Batsch) Fr.

Boletus arcularius Batsch, Elench. Fung. 97. 1783. (Mich. pl. 70. f. 5. 1729.)

Boletus exasperatus Schrad. Spic. 153. 1794.

Polyporus arcularius Fr. Syst. 1: 342. 1821.

This species was described by Batsch as follows: "Stipitatus; stipite subgracili, subclavato; pileo membranaceo convexo, subulato-fimbriato; stipiteque concoloribus, spadiceo-rufis; cellulis latissimis, rhombeis, aequalibus albis." Fries placed it in the genus *Favolus*, which he treated as a subgenus under *Polyporus*. Its tubes are certainly favoloid, but its close relationship to *P. Polyporus* has kept it near this species rather than with species of *Favolus*. Wright's specimen of *P. lentus* from Connecticut seems nothing more than *P. arcularius*. There is at Kew also the remains of a specimen from Ohio, which very probably belonged in the same category.

P. arcularius shows little variation except in size throughout its wide range. It occurs on decaying wood and shows much the same habit as *P. elegans* and *P. Polyporus*, but differs from these species in occurring more abundantly in the south. Specimens have been examined from the following localities: Tyrol, *Bresadola*; Connecticut, *Earle*; Pennsylvania, *Everhart*; New Jersey, *Ellis*; Georgia, *Ravenel*; Ohio, *James, Morgan*; Missouri, *Demetrio*; Nebraska, *Bates*; Colorado, *Crandall*; New Mexico, *Earle*; Michigan, *Longyear*; Kansas, *Bartholomew*; Kentucky, *Price*; Mississippi, *Ricker*; Alabama, *Earle, Baker*; Florida, *Rau, Calkins*; Mexico, *C. L. Smith*.

17. *Polyporus variiporus* sp. nov.

A small plant resembling *P. Tricholoma*, but firmer and tougher with thicker stipe and more irregular pores. Pileus orbicular, convex to depressed, 1-2.5 × 0.1-0.2 cm., surface glabrous, more or less radiately striate, somewhat concentrically rugose, straw-colored to isabelline, fulvous to chestnut-colored around the margin, which is thin, inflexed, undulate, finely ciliate, the cilia being

fugacious: context 1–1.5 mm. thick, tough, white; tubes 0.5 mm. in length, 2–4 mm. in diameter, very irregular, much elongated radially near the stipe or in marginal folds, not noticeably decurrent, yellowish, polygonal to lamelloid, edges firm, entire, becoming denticulate or fimbriate with age; spores ellipsoid, smooth, hyaline, $4 \times 7 \mu$: stipe central, hollow, increasing above, lighter than the pileus, subglabrous with a silky luster, 2 cm. long, 2–6 mm. thick, the buried base enlarged, tomentose and frequently black.

This species was collected by Earle on his recent trip to Porto Rico. It grew on sticks buried in sandy soil in woods. The thick stipe and irregular tubes suggest *P. pachypus* of Montagne, but it is evidently not that species. It differs from nearly related ciliated forms in being conspicuously tougher and thicker with tubes that are in one place small, regular and polygonal and in another transformed by confluence into long sinuate furrows resembling the gills of an agaric. This transformation commonly occurs near the stipe or in pockets made by the partial folding of the pileus.

18. POLYPORUS TRICHOLOMA Mont. Ann. Sc. Nat. Bot. II. 8: 365. 1837. Pl. Cell. Cuba, 249. *pl.* 17, *f.* 1. 1842

This species was originally well described and figured by Montagne and several specimens of typical plants are still in existence, so that no doubt exists concerning its identity. In addition to this, a large number of fresh specimens have recently been collected in Cuba and Jamaica by Earle and Underwood and some study made of the habits and variations of the species. It is found to grow in abundance throughout the West Indies and Central America, varying but slightly in color, but more in size and surface markings, occurring usually on dead sticks in woods, but sometimes upon logs and even on cocoanut husks. When seen in the fresh state it is commonly pure white and easily mistaken for some small agaric, but often with age and always in drying the color changes to pallid or light yellowish-brown, or even to a pale reddish-brown. The type plants were, of course, dried specimens and happened to be darker than is usual with the species.

Another variation still more marked and the cause of considerable confusion is in the size and persistency of the cilia around

the margin of the pileus. Sometimes they are long and rigid, sometimes short and flexible; they usually disappear at early maturity, but occasionally persist until the plant has passed its prime. It is doubtful if Montagne himself knew of these variations, and it is certain that Berkeley was much confused by them. In dealing with the types of this plant it is best to consider the Cuban specimens only, since plants from elsewhere were later included in the species concept, which are in reality different things. Likewise, in examining Berkeley's specimens of *Polyporus similis*, one must confine himself to the Brazilian plants, since the Cuban ones are only *P. Tricholoma* with the cilia gone. In the same way *P. flexipes*, *P. stipitarius* and a few other species have undoubtedly become confused with *P. Tricholoma* in the minds of not a few mycologists and many collectors.

The following collections are in the herbarium of the New York Botanical Garden: Jamaica, Earle 502, 592, Underwood 2953; Cuba, Underwood and Earle 246, 579, 744, 851; Mexico, C. L. Smith; Nicaragua, C. L. Smith; Cozumel Island, Millspaugh 1556.

19. *Polyporus Cowellii* sp. nov.

A small light-colored plant resembling an agaric, having a very thin translucent context, minute pores and a slender central stipe. Pileus orbicular, convex to plane, umbilicate, 1–2 × 0.02–0.05 cm.; surface nearly glabrous, minutely concentrically rugose, straw-colored to isabelline, becoming darker and hygrophanous around the margin or in blotches or even over the entire surface, often faintly radiate-striate about the center with delicate white or brown lines; margin very thin, straight or inflexed, somewhat irregular in outline, finely denticulate, the teeth prolonged into short fugacious cilia: context extremely thin, membranous, 0.1–0.2 mm. thick, white or pallid, partially or entirely translucent; tubes 0.2–0.4 mm. long, 3–6 to a mm., larger by confluence, adnate, pallid, polygonal, edges very thin, subentire, becoming fimbriate with age; spores ellipsoid, smooth, hyaline, binucleate, $2.5 \times 5 \mu$: stipe central, solid, very slender, equal, concolorous or slightly darker, pruinose to glabrous, smooth, longitudinally striate, 2–3 cm. long, 0.3–1 mm. thick, soft and milk-white at the center.

This species is described from dried plants collected in the island of St. Kitts by Britton and Cowell during September and

October, 1901. It was found in considerable quantity growing on decaying wood. There is also in the herbarium of the New York Botanical Garden another good collection of this species from Porto Rico made by Mr. and Mrs. A. A. Heller in March, 1899. It also grew on dead wood. This latter collection, however, is not considered typical.

20. *POLYPORUS CAUDICINUS* (Scop.) Murrill

Boletus caudicinus Scop. Fl. Carn. ed. 2, 2: 469. 1772.

Boletus Juglandis Schaeff. Fung. 3: 75. pl. 101-102. 1774.

Boletus squamosus Huds. Fl. Angl. 614. 1778.

Polyporus Ulmi Paul. Icon. Champ. pl. 13. 1793.

Polyporus squamosus Fr. Syst. 1: 343. 1821.

Polyporus caudicinus Murrill, Jour. Myc. 9: 89. 1903.

Exsicc.: France, *Roumeguère* 2706, 2707, 3403; Germany, *Krieger* 860, *Sydow* 212, *Magnus*, *Murrill*; Sweden, *Murrill*; England, *Murrill*; Canada, *Dearness*; Connecticut, *Underwood*.

This species is the largest of the genus and occurs in very conspicuous clusters on the trunks of injured deciduous trees in Europe and America. In London and in some of the cities of Germany I have found it especially abundant on elms, maples, horse chestnuts and other shade trees. It is at present comparatively rare in America and need not here be seriously considered from an economic standpoint for some years to come.

Scopoli's description is not so clear and definite as might be desired, but in the first variety described there can be no question as to the plant he had in mind, for he speaks of it as multiple, lobed, fleshy, large, growing on the trunks of trees, variegated above with darker spots, light-colored beneath, with large polygonal pores. The large pores connect it with the genus *Hexagona*, but its general structure and habit are those of *Polyporus*. Young plants collected in Connecticut, by Underwood, in May, showed very short favoloid tubes with thin toothed dissepiments, a milk-white fleshy-tough context and a scaly pileus differing little in color from that of the mature plant. The odor of the fresh plant is strong and somewhat mealy; the base of the stipe is clothed with short dark-brown or black velvety tomentum. It is quite possible that in this species we have modifications pro-

duced by an abundance of nutritious food such as is not supplied to the common species growing on dead wood. Large size, very rapid growth, ample pores and a somewhat softer context are probably connected with a better food supply and a more vigorous mycelium.

In addition to *Polyporus*, the present species has served as the nomenclatorial type of two recent genera, *i. e.*, *Cerioporus* Quél. (Ench. Fung. 167. 1886) and *Melanopus* Pat. (Hymenom. Eur. 137. 1887).

21. **Polyporus maculosus** sp. nov.

A small tough plant nearly related to *P. fissus*, but minutely tomentose, with rounded nearly glabrous spots of a reddish-brown color. Pileus irregularly orbicular, deeply depressed, 3–3.5 × 0.1–0.2 cm., surface finely and densely tomentose, radiately striate, drab-colored, ornamented with several light-bay or chestnut spots mostly situated about midway between the center and the margin, which is very thin, striate, irregular and somewhat fissured but entirely devoid of teeth or cilia: context 0.5–1.5 mm. thick, tough to corky, pallid; tubes 0.2–0.4 mm. long, 6–7 to a mm., decurrent, pallid or yellowish, subcylindrical, edges entire; spores ovoid, hyaline, smooth, $3 \times 4 \mu$, immature in these specimens: stipe central, solid, woody, tapering upward, chestnut-black at the base with blotches of light-yellow, uneven, subglabrous, 2 cm. long, 2–4 mm. thick.

This plant was collected in Central America by C. L. Smith. The hymenium is not quite mature, but the other characters are well marked. The peculiar reddish spots seem to be caused by the disappearance of the thick tomentum at certain points. The species occurs on wood and has the habit of representative plants of this genus.

22. **POLYPORUS ELEGANS** (Bull.) Fr.

Boletus elegans Bull. Herb. France, *pl.* 46. 1780.

Boletus nummularius Bull. Herb. France, *pl.* 124. 1782.

Polyporus elegans Fr. Epicr. 440. 1836–1838. Pat. Tab. Fung. 137. 1883–1886.

Abundant throughout Europe and North America on decaying branches and trunks of various trees. Being exceedingly variable in form, it is not strange that in Europe it is confused with its variable near relative, **Polyporus Calceolus** (*Boletus Calccolus*

Bull.) [*Polyporus varius* (Pers.) Fr.], and some European mycologists go so far as to say that *P. elegans* and *P. Calceolus* are the same thing; but field studies in Sweden have convinced me that we have nothing in America to correspond to *B. Calceolus* of Bulliard, whose description and figure of this species may be easily matched with European specimens from either field or laboratory, while even our most closely allied Canadian forms of *P. elegans* fail to connect with the European relative.

The variety first described as *B. nummularius* by Bulliard is quite distinct from the typical form when seen in the herbarium, but when both are picked from the same branch in the woods the differences speedily become of minor importance. In the following partial list of specimens examined, no distinction is made between the two: Tyrol, *Bresadola*; Finland, *Karsten*; Canada, *Macoun*, *Dearness*; Vermont, *Burt*; Maine, *Ricker*, *Miss White*; Connecticut, *Earle*; New York, *Underwood*, *Cooke*, *Lobenstein*; New Jersey, *Ellis*; Ohio, *Morgan*; West Virginia, *Nuttall*; Michigan, *Ward*; Iowa, *Holway*; Colorado, *Bethel*, *Crandall*; Washington, *Piper*, *Parker*.

23. POLYPORUS FISSUS Berk. Lond. Jour. Bot. 6: 318. 1847
Polyporus trachypus B. & Mont. Syll. Crypt. 154. 1856.

Both of the above names were assigned to plants sent from Ohio. Those sent by Lea were small and undeveloped and one or two were accidentally lobed. The tubes were so small as to be overlooked and he labelled them *Thelephora*. The collection made by Sullivant at Columbus was evidently described by Montagne. The description is accurate and quite complete. The reason why neither of these names has come into common use is due to the fact that our plant was at first miscalled *P. picipes*, a name given by Fries without good reason to plants of *P. calceolus* having particularly black stems. This latter species, so far as we are aware, does not occur in America, but American specimens at Kew are labeled *P. picipes* Fr. In the herbarium of Fries at Upsala there is only one specimen of "*P. picipes*" from North America and that is determined by Ellis. For our common species, then, which has been so generally known as *P. picipes*, we must make use of Berkeley's name.

The plant grows upon dead wood and has the habit of *P. elegans*, but is larger and darker in color. It often persists, however, until bleached nearly white. Exsiccati have been studied from Maine, *Harvey*, *Miss White*; Connecticut, *Underwood*; Massachusetts, *Seymour*; New York, *Clinton*, *Overacker*; Pennsylvania, *Everhart*; Vermont, *Farlow*; Kentucky, *Price*; Washington, *Parker*; Michigan, *Wood*, *Miss Minns*.

SPECIES INQUIRENDÆ

Polyporus amygdalinus B. & Rav. Grevillea, **1**: 49. 1872. This species is said to differ from *P. caudicinus* in having smaller tubes, but it is probably only a form of that species in an undeveloped stage. I have not been able to find a type specimen.

Polyporus cyathiformis Lev. Ann. Sci. Nat. Bot. III. **2**: 181. 1844. The type of this species was probably burned with most of Leveillé's types during the occupation of Paris by the Germans. The description corresponds closely with *P. craterellus*, but it is difficult to determine that the two species are identical.

Polyporus pachypus Mont. Pl. Cell. Cuba, 421. 1842. This species is described as caespitose, with thick excentric stipe and membranaceous tubes, which are small and rounded near the margin and large and favoloid near the stipe. No types have been found in foreign herbaria and Montagne himself said in his *Sylloge* that the species needed further investigation.

Polyporus stipitarius B. & C. Jour. Linn. Soc. Bot. **10**: 304. 1868. The original description just cited does not materially assist one in interpreting the type plants in the Berkeley herbarium. Most of these types so closely resemble *P. Tricholoma* that a new description of them seems superfluous; and the one card of specimens which appears to be somewhat different from the rest was listed under *P. Tricholoma* by Berkeley at the time that *P. stipitarius* was described. Judging from the Kew collections, *P. stipitarius* appears to differ from *P. Tricholoma* chiefly in possessing a longer stipe, yet the description calls for a stipe shorter than that of *P. Tricholoma*. New material may possibly throw light on this problem, but I seriously doubt if Berkeley's species can ever be entirely disentangled from the earlier one of Montagne.

Polyporus gracilis Kl. Ann. Nat. Hist. **3**: 384. 1839. This

is a caespitose species with slender pruinose stipe, small pellucid pileus, ciliate margin and very minute polygonal or sinuose tubes. Saccardo considers it the same as *P. flexipes* Fr. and *P. hapalus* Berk., but these two species do not, so far as I know, occur in the West Indies or even in Central America.

Polyporus Humphreyi P. Henn. Hedwigia, **37**: 280. 1898. From the description of this species it appears to resemble *P. Tricholoma*, but has adnate instead of decurrent tubes with whitish fimbriatulate edges. This and the next species are placed here because I have not yet examined the type specimens.

Melanopus marasmiioides Pat. Bull. Soc. Myc. France, **18**: 173. 1902. This species is found in Guadeloupe and Martinique and is related to *Favolus melanopus*. It is deeply umbilicate, ochraceous, with translucent denticulate margin, which is sterile below, large shallow radiating tubes and a black central stipe. Undeveloped plants resemble certain species of *Xylaria*. An examination of the plant is necessary to determine whether or not it properly belongs with *Polyporus*.

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